

RUSLE2

Guidelines for Estimating Rock Cover in the Field

Introduction: In Iowa for the majority of soil we will not be using the Rock Cover in RUSLE2. If after a field visit you find significant rocks on the soil surface and you feel it could be effecting the cover management than the rock cover may be utilized in RUSLE2 only after your do several line-transects to determine the percent of rock cover.

The RUSLE2 computer program has an input box on the Profile view screen for "Rock cover, %". This document offers guidelines for making estimates in the field for the percent cover from rock, rock fragments, or coarse fragments. Coarse fragments on the soil surface affect the Cover and Management factor in RUSLE2. Rock cover does not affect the Soil Erodibility factor.

Caution - Use Good Judgment: Research data shows that the presence of rock cover can significantly reduce soil erosion, and the RUSLE2 model accounts for this effect. However, users should be cautioned to exercise good judgment when developing conservation planning alternatives that reflect the presence of surface rock fragments. For example, a rock cover entry in RUSLE2 that reduces soil loss to acceptable levels should be re-considered if the hillslope shows clear evidence of severe, active erosion.

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Minimum Size Requirement: Count rock fragments that are larger than 10-mm (0.3937 in, or 2/5 in). Professional judgment is needed when rocks are flat or light in weight. The defining criteria are whether it is easily moved by runoff during a storm event. **NOTE:** For the 10-mm size, the minimum size rock should be slightly larger than a 3/8-in drill bit, or slightly smaller than a 1/2-in drill bit.

Most Erosive Period: The estimate of rock cover should represent the range in rock cover over the 3 or 4 month period that is most erosive. In Iowa the "Most erosive" is in the spring when we have both the period of highest rainfall erosivity and the vulnerable management period.

Measuring Rock Cover: Measure rock cover using the line-transect method.

Rock Cover on Entire "L": The percent rock cover should be based on the entire eroding hillslope profile, or "L". We are evaluating soil loss on the entire RUSLE2 hillslope profile. Avoid overestimating the rock cover based on a segment of the slope that contains the largest percent of rock cover. Adjust the rock cover estimate to represent the field or portion of the field represented by the hillslope profile if rock cover is significantly more or less on the representative hillslope compared to the rest of the field.

Ignore Overlap with Residue: When measuring or estimating rock cover, ignore any overlap with residue cover. Count the surface rock cover even if it lies above or below residue. RUSLE2 takes into account the overlap of different types of ground cover. For example, if rock cover is 15% and corn stalks provide 40% cover, the total cover considered by RUSLE2 is 49%. RUSLE2 properly takes into account the nonlinear mathematics of the combination of rock cover and crop residue.